The Contract to Sell Contracts

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Abstract

This paper considers an understudied contract form: the contract to sell contracts. This contract is used when an "originator" creates a set of contracts with individual obligors, bundles the contracts into a portfolio and sells the portfolio – the contract to sell contracts – to a financial intermediary. Securitization is our principal example. A bank originates consumer mortgages, aggregates them into a portfolio and sells the portfolio to a financial buyer. The portfolio is ultimately traded to public investors. We exhibit the special features of the contract to sell contracts and the consequences of neglecting those features. In particular, damages do not scale for this contract form. The damages for breach of a contract to sell goods are N times the damages for a single unit because breach, say of a quality warranty, commonly affects every unit in a goods bundle in the same way. In contrast, if the originating bank warrants the quality of individual loans in a loan portfolio, a breach, say by making careless appraisals, may cause some homes in the portfolio to have values that are lower than represented values but not cause other homes to have lower values. Also, buyers in the low value homes may not default or may default at different times in the repayment schedule. Hence, the buyer of a portfolio – the promisee of the contract to sell contracts – must establish breach, causation and damages *contract by contract*. A promisee cannot meet this burden when it buys portfolios with several thousand loans. We show that the contracts between originating banks and financial intermediary buyers nevertheless warranted that *each* loan in a large loan portfolio was created appropriately and that, in consequence of trading portfolios under these "aggregated" contracts, consumer mortgage backed security portfolios were sold along the intermediation chain and to the public under *unenforceable* agreements. The originating banks recognized that they would not be liable for breach (and were not in the event) and so reduced pre-loan screening of borrowers and post-loan salvaging of defaulted loans. We identify the reasons why sophisticated parties wrote, and continue to write, inefficient contracts to sell contracts and suggest novel law reforms that respond to those reasons. For example, contract law remedies are individuated; they implicitly assume that damages scale. Hence, contract law does not account for the contract to sell contracts. We thus suggest that the law should expand

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to contain a portfolio default which would permit a buyer to recover the difference between the value a compliant contract portfolio would have had and the value of the portfolio the parties traded.

1. Introduction

This paper considers the contract law and contract theory implications of an understudied contract form: the contract to sell contracts. This contract form governs the relatively recent and economically important commercial practice under which an agent creates a set of contracts, bundles them into a portfolio and sells the portfolio to a financial intermediary. The initial intermediary buyer either sells the portfolio in the capital market or, more commonly, resells the portfolio – a second contract to sell contracts – to another financial intermediary, who repeats the process. In the end, public investors become the owners. In our principal example, an originating bank finances a set of home purchases, taking mortgages on the borrowers' homes. The bank bundles the lending agreements and accompanying mortgages into a portfolio, which it sells to a financial intermediary.[1] The intermediary bundles the portfolios of several such "originating banks" into a larger portfolio, which it sells to a second financial intermediary. The intermediation chain ends –often after more such sales -- with a trust or a "special purpose vehicle" (an "spv"). This entity aggregates the several bundles it buys and then sells shares in itself to public investors. The public investors purchase "certificates" in the trust or bonds of the spv. A trust certificate or a bond entitles the investor to a share of the repayments the individual borrowers make under their lending contracts. As other examples of contracts that similarly are bundled into portfolios: (a) An originating retailer sells durable goods on credit to consumers – a car, furniture – and takes back the consumers' promissory notes and security interests in the goods; (b) An originating bank issues credit cards to consumers. A lending contract is created when the consumer does not pay her full credit card obligation at the end of a month; (c) An originating bank acquires peer to peer loans from initial individual lenders.[2] These "long intermediation chains" – several financial intermediaries and a public investment vehicle -- permit individual borrowers to access the public credit market, which charges less for money than traditional banks.[3]

[1] In this paper, a "portfolio" holds a large number of individual consumer loans, which often are secured.

[2] Peer to peer securitizations are described in Wilfred Daye, Jianguo Xiao and Yishu Song, "Marketplace Lending Securitization Tracker" Q1|2017 (Peer IQ Distributor).

[3] In a "short intermediation chain", consumers lend money to a bank (i.e., they make deposits), the bank lends money to consumers, and the consumer borrowers repay the bank. An extensive discussion of the economics and structure of long intermediation chains for various asset classes, including mortgages and credit cards, is Gary Gorton and Andrew Metric, "Securitization" in Handbook of the Economics of Finance 1 (2013). Particularly relevant to this paper, these authors remark (at 63, 64): "The contractual nature of securitization also needs more attention….Nothing is known about servicers of securitized portfolios [a servicer administers the portfolios for the buyer] or about the contractual arrangements with servicers. Pooling and servicing contracts govern how loans

We analyze these "contracts to sell contracts": the agreements that govern the trade of portfolios among the financial intermediaries. The parties to the agreements usually are informed, rational, sophisticated and free from coercion. Under these ideal contracting conditions, the contracts should be privately efficient and, if the contracts do not create externalities, should be socially efficient as well. To give content to this standard view in our context, we should say what an efficient contract to sell a portfolio of contracts would achieve. We then ask – this paper's questions– whether the contracts in the examples above were, or could have been, efficient.

It is helpful to begin with the contract between a bank and its individual borrowers. This contract should maximize borrower surplus subject to the conditions that the bank invest optimally in pre-loan screening, so that it excludes poor risks, and invests optimally in post-loan monitoring, so that it creates a credible deterrent to strategic default and can salvage savable loans. If the intermediation chain ended with the bank, it would be the residual claimant and so would contract efficiently with the individual borrowers. Now turn to the first contract under which the originating bank bundles and sells its loans to another financial intermediary. This contract would be efficient if an originating bank that anticipated making it would continue to invest optimally in pre-loan screening and invest optimally in the capacity to monitor defaulters.

We use the securitization contract as our principal example because there is considerable data about how this contract to sell contracts performed and because the contracts were, and remain, highly consequential. We make two claims: parties, particularly in the years 2005-2007, made inefficient contracts to sell portfolios of contracts, when efficiency is defined as above. Further, under current law and financial practice, parties then could not have profitably made, and now cannot profitably make, efficient contracts to sell portfolios of loans. Both claims follow from differences between a contract to sell contracts and a contract to sell goods or services.[4] We sketch here, and expand in Part 3, the four major differences:

> (i) A defective contract to sell contracts and a compliant contract are observationally equivalent. For example, suppose an originating bank promised to the initial intermediary buyer of mortgage backed securities (an "mbs" set) that the bank conducted its home appraisals in accordance with a standard appraisal protocol. The bank followed the protocol for the A mortgage but not for the B mortgage.[5] The A and

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can or cannot be renegotiated. This is important …." The warranties described below commonly were made in the pooling and servicing contracts.

[4] We focus on the difference between the contract to sell contracts and the contract to sell goods.

[5] Regarding the realism of this example, trust plaintiffs alleged that many appraisals were not conducted in accordance with standard appraisal practice. See *Nomura Home Equity Loan, Inc. v. Nomura Credit & Capital, Inc.*, __ N.Y. 2d __, __ N.Y.S. 3rd __ (N.Y. Court of Appeals 2017).

the B mortgages, however, would be identical on their face, other than the values for particular sale parameters – the house price, the repayment schedule. Therefore, a *portfolio* composed of the A and B mortgages would be observationally equivalent to a portfolio composed of two correctly created mortgages. In contrast, a defective product and a compliant product often are observationally different: the defective product is broken. A bundle of defective products thus commonly is observationally different from a bundle of compliant products. [6]

(ii) A contract breach is likely to affect each contract in a contract portfolio differently. Thus, an appraisal protocol may require the appraiser to check comparable sale prices but an appraiser may have assigned a value to houses without checking. Though the originating bank would have breached its promise to conduct appraisals properly, the values for some houses could be correct. The originating bank's breach, that is, would have reduced the portfolio's value, but not to a level which would have reflected the breach of every mortgage contract. In contrast, a seller intends every product in a goods bundle to perform to the same standard. Hence, if the seller warranted performance – every product would meet the standard – breach would cause each product to fail in the same way. The contracting relevance of cases (i) and (ii) is that, in sales of goods, breach often is immediately apparent and total while, in sales of contracts, breach is immediately opaque and is commonly partial.

(iii) Degrading product quality implies excess demand, as measured by the efficient level. Some agents would not buy if they knew the actual quality. Degrading a contract to sell contracts – i.e, writing an unenforceable contract with the intermediary buyer -- can imply excess supply. To see how, suppose that an originating bank (or credit card issuer), in anticipation of making such a contract, relaxes pre-loan screening. There would then be excess demand by the potential borrowers, which would yield an excess supply of contracts to bundle into portfolios. The borrowers that passed the relaxed screen but would have failed the tight screen are poor payment risks. There is a "contagion effect", as regards deault, when the likelihood that a portfolio borrower will default is increasing in her belief that other portfolio borrowers will default. Excess supply can exacerbate the contagion effect because the illustrative borrower's belief that other borrowers are defaulting becomes stronger as the pool of borrowers becomes weaker. A contagion effect cannot exist among the goods in a bundle because goods are inanimate.

[6] Products with latent defects are observationally equivalent to compliant products at the time of sale; noticeable differences present later. We discuss the relevance of this possibility immediately below.

(iv) A breach in the cases that paragraph (ii) describes – not performing appraisals properly – caused only some of the contracts that constituted the portfolio to fail. There also are cases in which compliance could not prevent every contract that constitutes a portfolio from failing. To see why compliance itself may not be enough, let an originating bank promise the intermediary buyer that the bank would pre-screen potential borrowers carefully. A particular borrower defaulted because he was laid off. The contract law default imposes only endogenous risks on sellers; these are risks a seller could materially reduce. Whether the originating bank breached its contract thus depends on whether an optimal screen would have eliminated borrowers with a high probability of being laid off. Because borrowers default for many reasons, a portfolio buyer may have to confront such causation issues – i.e., that it was breach that caused a particular loan to fail – for many nonperforming loans. In this example, the disappointed portfolio buyer thus must show both that the originating bank failed to screen carefully *and* that a careful screen would have eliminated loan applicants with shaky employment statuses. In contrast, establishing breach of a contract to sell goods usually *also* establishes causation: a product that is not as warranted is, by that fact, less valuable than a compliant product. And under the obverse, when parties contract to sell a goods bundle compliance itself usually is enough.

The source of these four related differences between contracts to sell contracts and contracts to sell goods is that the paradigmatic subject of a sale of goods is one unit. A buyer's expectation interest thus is specified as the difference between his valuation and the price. But suppose that a contracting dyad makes what we call an "aggregated" contract to sell a bundle of goods. The bundle would be the unit of sale but the paradigm retains analytic relevance. To see how, we consider two cases. In the first, the bundle is not disaggregated. A broker, say, agrees to trade a thousand bushels of wheat to a bakery or a manufacturer agrees to trade a thousand washing machines to a retail chain, warranting that each machine in the bundle meets a specified performance standard. Breach would be the seller's failure to tender the goods or to tender goods that do not meet the standard. The buyer's damages for both breach types "scale". When the seller fails to deliver the wheat, the buyer can recover the difference between the contract and market prices for one unit times N.[7] When the seller delivers washing machines that breach the quality warranty, the buyer can recover the difference between the value of a washing machine if it had met the standard and the value the machine had as delivered times N.[8] For the warranty breach outcome, contract law plausibly assumes that breach affects every unit in the same way. This is because the units are identical – they are all washing machines – and the manufacturer attempts to make every machine to the same

[7] UCC §2-711.
[8] UCC §2-714.

standard; hence, a failure as to one unit commonly implies a failure as to every other unit. The buyer therefore can establish breach with respect to all by sampling some.[9]

In the second case, the goods bundle ultimately is disaggregated. The retail chain sells washing machines to individual consumers. Any defect in a washing machine would be latent (else the retailer would not have sold it) but the retailer will learn whether the machine breaches the seller's quality warranty because the dissatisfied consumer buyer will complain. And to generalize, defective goods either are observably different from compliant goods when the goods are sold or defects are revealed through use. In either event, the relevant buyer – here the retailer – can identify to the manufacture *each* breached good and so can conveniently sue for the damages the breach caused.

Now consider the two cases in connection with an agreement to trade a set of contracts. An originating bank bundles a thousand mortgage backed securities into a portfolio and makes an aggregated contract to sell the portfolio to an intermediary purchaser. The bank warrants that *each mortgage* in the portfolio was created in accordance with standard underwriting practice (such as conducting appraisals properly). Suppose first that the contract bundle remains aggregated. In contrast to the goods case, damages and breach do not scale. Damages would be the difference between the face value of a loan and payments made, but this difference will vary by loan. And as noted above, breach may have affected only some of the constitutive contracts so that, to establish liability, the intermediary purchaser would have identify which portfolio loans the originating bank's defective appraisal practices caused to fail.[10] Because the gain from many such detailed investigations into damages or breach commonly would exceed the cost, the intermediary purchaser, in fact, *could not* enforce a warranty that each portfolio loan was created in accordance with standard underwriting practice when mortgages loans are sold in large aggregations. And also in contrast to the sale of goods there is no second case: loan bundles are never disaggregated. Rather, the capital market investors buy shares in the undivided res. Thus, the relevant buyer – here, the financial intermediary – cannot learn from customer complaints which loans were defectively created, and sue for damages on just those loans.

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[9] If only a portion of a sample is defective, the buyer is entitled to the defective portion times the one unit damages, so the remedy scales for a subset of the goods bundle. There are few examples of the subset case in the reports. Part 4.1 considers some trusts' efforts to establish seller breach by taking samples from large mbs portfolios.

10. Some courts have held that a warranty breach is actionable if it materially reduced the value of a particular loan; the buyer need not show that the loan actually was in default. See, e.g., *Homeward Residential, Inc. v. Sand Canyon Corp.* U.S. Dist. LEXIS 20771 (S.D.N.Y. 2014); *Assured Guar. Mun. Corp. v. Flagster Bank, F.S.B.,* 892 F. Supp. 2d 596 (S.D.N.Y. 2012). Because in ordinary usage a loan is not performing if it falls materially in value as well as if it defaults, the paper uses the phrase "nonperforming" to refer to both defect types. Importantly, the buyer must establish either a value decline or a default loan by loan.

To summarize, an aggregated contract on a portfolio of contracts is very difficult for the portfolio buyer to enforce because breached contracts are observationally identical to compliant contracts; breach commonly affects only some portfolio contracts; damages cannot be proved by multiplication -- multiplying one contract loss by N – but rather must be proved by addition – summing individual contract losses; and contract bundles remain in aggregated solution. Because the buyer of an aggregated portfolio contract could not enforce it, the contract would be inefficient in two ways. First, an originating bank, anticipating the nature of the contract, would realize that it would not be liable for breach; hence, the bank would have an attenuated incentive to pre-screen potential borrowers optimally. Second, because the intermediary portfolio buyer could not prove damages or breach, it would continue to own the portfolio. As a consequence, the originating bank would not have to engage in post-loan monitoring at all.

We therefore argue that an efficient contract to sell contracts cannot be aggregated *in the same way* as efficient contracts to sell goods are aggregated. Instead, damages and breach would have to be a function of portfolio value itself rather than a function of damages and breach on a single portfolio unit multiplied by N. We later sketch how such a contract – here a "portfolio contract" -- would look but for now we suggest that an originating bank would warrant, say, that *its practice* is to create loans in accordance with standard underwriting practice.[11] Breach would then be the bank's failure to follow the practice routinely. In contrast, *and* in the actual event, parties to the long intermediation chains aggregated the contracts to sell mbs portfolios *in the same way* that parties aggregate contracts to sell goods. The originating bank did not warrant to the initial intermediary purchaser the quality of its loan origination practice but rather warranted that the bank made *each consumer loan* and created *each consumer mortgage* in accordance with standard underwriting practice; and every purchaser would remake these warranties to its own buyer.[12] To be expected, the originating banks slighted pre-loan screening and the intermediaries salvaged too few loans.

[11] Part 4.2 below discusses how current contract law would respond to party efforts to write portfolio contracts; Part 6 discusses how the law could be improved.

[12] As examples of warranties among the parties to the long individuation chains: "(xxi) The origination, servicing and collection practices used by the Originator … with respect to *each Mortgage Note and Mortgage* … have been in all respects legal, proper, prudent and customary in the mortgage origination and servicing industry." from Mortgage Loan Purchase Agreement between Citigroup Mortgage Loan Trust Inc. and Citigroup Global Markets Reality Corp. February 15, 2007; "(xxii) The origination and collection practices used with respect to *each Mortgage Note and Mortgage* have been in all respects legal, proper, prudent and customary in the mortgage origination industry." from Assignation and Recognition Agreement among Citigroup Global Markets Reality Corp., Citigroup Mortgage Loan Trust, Inc. and WMC Mortgage Corp., January 31, 2006. The "RMBS TRUST SETTLEMENT AGREEMENT" of November 15, 2013 between JP Morgan Chase & Co. (a portfolio seller) and institutional investors in several hundred trusts provided, in one of the introductory recitals: "WHEREAS, the Institutional Investors have alleged that *certain Mortgage Loans* held by the trusts in breach of representations and warranties contained in the Governing Agreements, cause the Investors in such Trusts to seek to compel the trustee" to take legal action.

Parties mistakenly aggregated portfolio sale contracts for four reasons. First, contract remedies are "individuated": as said, the paradigm is to trade one unit, and when the parties agree to trade N > 1 units, the default remedies rest on the plausible assumption that the units are relevantly identical. There is no paradigm for trading contracts, and thus there is no aggregated *contract* default. Because courts treat contract law defaults as presumptively fair, the possibility that courts would be reluctant to enforce a contract that treated the portfolio itself as the subject of sale, together with the costs of creating such a novel contract, may have caused parties to mimic the aggregated goods contract. Second, because aggregation creates excess supply, intermediaries prefer it, the possibility of defaults aside. Hence, if many firms are aggregating, and defaults are thought to be unlikely, an intermediary may do better emulating other portfolio buyers rather than buying and then attempting to resell a smaller, more costly portfolio contract. Efficient contracts sometimes are not equilibrium contracts.

Third, a contract that made breach and damages a function of the portfolio itself would risk involving the buyer in an originating bank's insolvency. In commercial law, a firm that lends money to a retailer and takes a security interest in the retailer's receivables is a creditor in the failed retailer's bankruptcy; but a firm that "bought" the receivables would not be a creditor any more than a buyer of goods would be a creditor in her seller's bankruptcy.[13] If a sale is "with recourse", however, courts treat the buyer as if it were a creditor in the seller's bankruptcy. In a recourse sale, if the obligor – the consumer – does not pay, the retailer must buy back the receivable. The retailer thus bears the payment risk, just as it would if it borrowed on the strength of its receivables rather than "sold" them. A contract between an originating bank and the initial intermediary buyer that permitted the buyer to recover damages on the portfolio (rather than damages on an individual portfolio unit) apparently is similar to a sale with recourse in that the payment risk would remain with the originating bank. A court may then classify an initial intermediary buyer as a creditor in the originating bank's insolvency.

Many more such citations are available. Regarding remedies: "If the Seller or originator … does not cure such …[warranty] breach in all material respects, the Trustee shall enforce the obligations of the related Originator … and then, to the extent that the related Originator fails to cure such defect or breach, the related Originator or the Seller, as the case may, [shall] repurchase *that Mortgage Loan* from the Trust Fund at the Purchase Price …." from Pooling and Servicing Contract JPALT 2005-A §205(a); "…to the extent that the related Originator fails to cure such defect or breach … the related Originator or the Seller, as the case may be, [shall] repurchase *that Mortgage Loan* from the Trust Fund at the Purchase Price …." from Pooling and Servicing Contract JPALT 2006-A1 §205(a) (emphasis added in all citations).

[13] Because the commercial effect of a loan or a purchase was identical, there once was a question whether the ostensible buyer had to perfect – give public notice of its interest in the receivables. In 1998, the UCC was amended to make clear that such a buyer need not give public notice of the sale. See UCC §9-309(4). In 1993, a privately operated mortgage registry system, the Mortgage Electronic Registration System ("MERS"), was created. Recording with MERS is cheaper than recording under traditional recording systems. Both MERS and the amended UCC facilitated securitization by reducing its costs. For an explanation of how these two recording regimes function, and suggestions as to how better to harmonize them, see Adam J. Levitin, "The Paper Chase: Securitization, Foreclosure, and the Uncertainty of Mortgage Title", 63 Duke L. J. 637 (2013).

Because the assignee of a contract – a later buyer –assumes the rights and obligations of its seller, the holder of a trust certificate or a bond also could be a creditor. The public investors would know nothing about the underlying transactions, however, so they would have been reluctant to assume the risk of holding "bankruptcy involved" certificates or bonds. Regarding the fourth reason, if courts would hold that the originating bank retained the payment risk, the bank, under current accounting rules, could not book the proceeds of a portfolio sale as revenue at the time of sale. Rather, the bank would have to amortize the portfolio over time. As a result, the accounting profitability of portfolio sales would fall.

The *intended* consequence of these four reasons is that commercially significant contracts to sell contracts were, and today still are, mistakenly aggregated. The sellers are responsible for failed particular contracts, one by one. The *unintended*, and largely unforeseen, consequence is that these mistakenly aggregated contracts are inefficient; they cannot induce agents that originate contract portfolios to act as if they were residual claimants on those portfolios. Mistakenly aggregated contracts thus reduce financing costs, but come with a price. Our paper's principal contribution is to make this tradeoff salient.

We suggest four novel reforms, however. First, courts should enforce portfolio contracts if parties write them. Relatedly, contract law should facilitate the making of efficient portfolio contracts. For example, the law should include a portfolio implied warranty and a portfolio excuse term. Though parties likely would create tailor made substitutes for these default standards, their existence would encourage courts to be receptive to contracting on portfolios rather than contracting on individual units in portfolios. Second, the US should facilitate the sale of "covered bonds". In Europe, originating banks sometimes create portfolios and sell bonds on the portfolios directly to public investors. The repayment risk remains with the originating bank, so the intermediation chain effectively ends with it, but European statutes accord bankruptcy remote status to the bond purchasers.[14] Under this financing practice, the originating bank remains a residual claimant, which is efficient, but individual borrowers can access the public credit market, which also is efficient. There is almost no market here for covered bonds, nor will there be without such a statute. Third, accounting practice should change to permit originating banks to recognize the full return from a portfolio contract at the time of sale. Under current practice, originating banks can recognize revenue when they warrant individual units in a portfolio, which is supposed to but does not put risk on them, but

[14] We discuss covered bonds further in Part 6. Perhaps the earliest recognition that covered bonds could respond effectively to concerns in securitization markets is Hyun Song Shin, "Financial Intermediation and the Post-Crisis Financial System", Manuscript (2009). Covered bonds are extensively described in "Frequently Asked Questions About Covered Bonds", Morrison | Foerster LLP Memorandum (2016). How Europe generally regulates securitization markets is described in Daphne Heant, Sophie Vermielle and Yan Coatanlam, "Higher Quality Securitization" in Financial Regulation in the EU: From Resilience to Growth (Raphael Douady, Clement Goulet and Pierre-Charles Pradier eds. 2017) at 405.

the banks cannot recognize revenue under a contract that actually puts risk on them. This seems an irrational distinction. Fourth, but only in hard times, the state should consider guaranteeing or subsidizing individual portfolio mortgages. This would help to arrest a contagion effect.

We proceed as follows. Part 2 contains a simple model of the loan origination market. The model precisely derives the optimal short individuation chain contract that the long individuation chain contracts were supposed to, but did not, replicate; characterizes the borrower's incentive to default; proves the existence of a contagion effect (that a borrower's payoff from default can increase in the number of borrowers that default); and informally links macro-conditions to the magnitude of that effect. Importantly, the model shows that to enforce and to salvage the individual contracts in a mistakenly aggregated mbs portfolio, the intermediary buyer must know what the originating bank knew when it wrote those contracts. Few portfolio buyers have this knowledge. Part 3 sets out the anatomy of failure. It analyzes in further detail the reasons that caused, and today cause, originating banks to sell contract bundles under mistakenly aggregated contracts, and the consequent difficulties of enforcing these contracts. Part 4 discusses two related issues: how portfolio buyers, recognizing that their aggregated contracts were unenforceable as written, attempted, so far unsuccessfully, to enforce the contracts by treating them, for litigation purposes, as if they were portfolio contracts; and how contract law likely would treat a portfolio contract itself; Part 5 briefly considers equilibrium explanations for the existence of aggregated contracts to sell contracts; Part 6 discusses public policy implications. There we say more about the reforms sketched above and argue that they are superior to relevant Dodd Frank reforms. Part 7 concludes.

We end this Introduction by noting that, when contracts to sell are classified by the subject of sale, there are four contract types: (i) the contract to sell goods; (ii) the contract to sell services; (iii) the contract to sell a contract; [15] and (iv) the contract to sell contracts. There has been a large scholarly literature and much law concerning the first three contract forms, but this knowledge does not generalize: the contract to sell contracts raises different legal and economic issues. As far as we are aware, however, there is no scholarly discussion of the contract to sell contracts as a distinct contract form. This paper thus exhibits the virtues and vices of an early effort.

[15] There are numerous cases and statutes and a large scholarly literature on the contract to sell a contract. This contract form includes assignments of contract rights and negotiation of instruments.

2. Actual and Optimal Portfolio Contracts

We focus on "private-label" loans, which are loans that a federal agency does not guarantee. These loans were traded along long intermediation chains.[16] We need to consider here only (i) the transaction between the individual borrowers and the originating bank; (ii) the portfolio sale from the originating bank to the initial intermediary portfolio buyer; and (iii) the sale by the initial portfolio buyer of one or more loan portfolios to a trust.

The two sellers in this chain made representations and warranties (herein just "warranties") regarding the quality of the loans the originating bank made to the borrowers. Breach of some warranties could be established by examining the lending contract: the loans were legal to make; required a standard payment schedule; did not contain illegal requirements (such as usurious interest); did not require balloon payments, prepayment penalties or mandatory arbitration clauses; and the homes were protected with flood and title insurance. Breach of other warranties required a portfolio buyer to make an investigation: the appraisal was made according to a standard protocol; the borrower lived in her home; the borrower was employed at, and earned the income associated with, a specified job; the loan was otherwise extended in accordance with standard underwriting practice; and, in the sale from the intermediary buyer to a trust, that the portfolio loans were current when sold.

(i) <u>The Short Intermediation Chain: A Simple Model of Individual Borrowers and an Originating Bank</u>

The model derives the optimal contract between borrowers and the originating bank. The contract is a baseline: it permits a more precise characterization of how aggregated portfolio contracts caused originating banks to perform less efficiently than an optimal contract

[16] This was a large market. In 2006, private-label loans constituted 56% of Real Estate Mortgage Backed Security Issuance and 21% of total mortgages outstanding by dollar amount. 2 Inside Mortg. Fin., The 2010 Mortgage Market Statistical Annual 9 (2010); "In fact, towards the end of the boom in 2005 and 2006, the private-label market was securing more mortgages than the GSES [government agency sponsored loans]". James P. Dow, Jr. "Mortgage origination during 2002-2007 as an example of an evolutionary market", 26 J. Evol. Econ. 1007, 1017 (2016). In contrast, "Agency MBS [that is, mortgage backed securities] are backed by the issuing agency and are effectively default-free." Pengjie Gao, Paul Schultz and Zhaogang Song, "Liquidity in a Market for Unique Assets: Specified Pool and To-Be-Announced Trading in the Mortgage-Backed Securities Market, 72 J. Finance 1119, 1122 (2017). Many private label MBS portfolios used "tranching – the issuance of the RMBS [i.e., the portfolio)] with an internal senior/subordinate repayment priority structure that allocates the default risk on the underlying mortgages into a cash flow waterfall among investors. Tranching decreases the credit risk for senior tranches (classes of securities), while increasing it for junior tranches." See Adam J. Levitan and Tara Twomey, "Mortgage Servicing", 28 Yale J. Regulation 1, 15 (2011). Because even portfolios with badly written loans will generate a substantial return, senior tranches should, and apparently did, bear little risk. Hence, the seniors had little incentive to contract so as to increase the quality of the borrower pools. On the other hand, junior tranches had a heightened incentive to write such contracts. These creditors, and the creditors who held "non-tranched" portfolios, nevertheless accepted the inefficient individuated contracts we discuss. We do not consider tranching because the inefficient contracts are our concern.

would have required. As an example, defaults during the Great Recession were largely attributed to the inability to pay of borrowers who should not been extended loans. We show that inefficient portfolio contracts also could materially increase strategic defaults: breaches by borrowers who continued to value their homes but who believed that they could escape default's consequences when they expected default to be widespread. The likelihood of such a contagion effect is increasing in the inefficiency of the aggregated contract to sell loans. The model also provides a rigorous basis for evaluating actual and proposed reforms. It rests on four important assumptions: (a) The intermediation chain ends with the originating bank; (b) There is strict foreclosure;[17] (c) The bank cannot materially increase its ability to monitor borrowers and to modify loans in the short run; [18] (d) The originating bank and the borrowers are rational, risk neutral and maximize expected returns.[19]

The bank invests the sum I to screen a potential borrower pool and issues loans to the borrowers that pass. The "quality" of the pool – i.e., the financial soundness of the borrowers -- is increasing in the sum the bank invests. Each borrower realizes the gross benefit Y from her loan, which the bank does not observe: Y can vary among the borrowers.[20] The bank requires borrowers to repay the sum R, which equals the bank's cost of screening borrowers and monitoring defaulters. A borrower who repays her loan realizes the return Y – R and the bank realizes R. Importantly, the bank has a limited capacity immediately to monitor borrowers that default. A defaulting borrower who is initially monitored is foreclosed against and, in the model, receives a return of zero. The bank catches up eventually to borrowers it does not immediately monitor. It renegotiates with these borrowers to let them live in their homes under tougher loan terms. We capture this outcome by letting a borrower who is not immediately monitored realize the net return μY, where $0 < \mu < 1$. This implies that, if μ is high

[17] This is a legal requirement in the many states that prohibit deficiency judgments against consumer mortgagees. Permitting deficiency judgments has ambiguous effects in our model: the monetary return to default would fall but the expected return may not because suing consumers strains banks' monitoring capacities and so reduces the number of defaulters a bank could monitor.

[18]This limited capacity assumption seems realistic. Intermediary portfolio buyers often delegated loan administration to loan "servicers", who usually were independent firms. Some servicers had the authority to renegotiate with defaulters. See note 3, supra. During the recession, servicers renegotiated relatively few defaulted loans, which recent commentators attribute largely to the servicers' lack of administrative capacity. For data, the US created a home mortgage modification program ("HAMP"). A recent study of the program, Sumit Agarwal, et al., "Policy Intervention in Debt Renegotiation: Evidence from the Home Affordable Modification Program", 125 J. Pol. Econ. 654 (2017), reported some increase in modifications but fewer than expected. Relevant to the model here, the study reported that "… servicer-specific factors – *which seem to be related to their preexisting organizational capabilities* – are responsible for differences in preprogram renegotiation activity*".* (id at 659; emphasis added). Originating banks probably had less monitoring capacity than the specialized servicers.

[19] Data suggest that some borrowers in the period before the Great Recession were excessively optimistic about their ability to repay. Widespread borrower optimism would emphasize the importance of our claim: an originating bank with optimal incentives would screen out many such borrowers.

[20] For technical readers, borrower returns are distributed on $Y \in \left[\underline{Y}, \overline{Y}\right]$. The distribution of borrowers is assumed to be F(Y|I) = Unif f[$\underline{Y}$ (I), $\overline{Y}$ (I)].

enough (i.e., a defaulting borrower stays for free long enough or has some bargaining power), a borrower who is not monitored does better defaulting than repaying. Each borrower believes that the bank will monitor defaulters with a probability that is a function of the bank's actual monitoring capacity, denoted K, and any other information a borrower may have. After loans are issued, borrowers and the bank thus play an "enforcement game", in which borrowers that can pay choose whether or not to default given how many defaulters the bank can monitor.

Returning to the lending stage, the bank's contract with borrowers is a function of the bank's screening program (I), the borrower's type (her expected return and her belief as to whether she will be monitored (which in turn is a function of the bank's capacity to monitor), the required repayment (R), and how much value the bank permits a defaulting borrower who is not immediately monitored to keep (μ).[21] Under this contract, the borrower automatically defaults if the contract requires her to repay a sum that exceeds her return: $R > Y$.[22] The borrower automatically repays if she has a high realization and the bank can punish defaulters severely. In this event, the required repayment would be less than the borrower's expected loss from defaulting: $R \leq Y(1 - \mu)$.[23] Borrowers with moderate returns, those that fall in the interval $(R, \frac{R}{1-\mu})$, decide whether to play it safe and repay or to default and risk being monitored.

Each borrower knows that the probability of being monitored, P = K/D, equals the monitoring capacity of the bank, K, divided by the number of borrowers who default, D. Because, holding K constant, the probability of being monitored falls as the number of defaulters increase, the borrower thus understands that her decision to default should depend on her belief regarding whether other borrowers will default. As a consequence, multiple defaulting scenarios are possible: there may be few defaults when everyone believes that most borrowers will repay, so that a borrower's subjective probability of being monitored, K/D, is too high to risk default. On the other hand, default may be widespread if everyone believes that most borrowers will default, so that the borrower's probability of being monitored immediately (and realizing a zero return) is small enough to make default a good risk. Importantly, these

[21] Again for technical readers, the debt contract (DC) is DC (I, (Y_y, x_y), R, μ), where x_y is the borrower's belief that she will be monitored and equals K plus a "noise term" that can be positive (the borrower overestimates the probability of monitoring) or negative (the borrower underestimates the probability). For convenience, we assume that borrower estimates are unbiased, so that a borrower's expectation of being monitored equals the true probability.

[22] A person will not borrow if she expects to have a lower valuation for her home than the required repayment. Hence, borrowers can become automatic defaulters when their ex post valuations are lower than their ex ante valuations. This could occur because housing prices fall, a possibility considered in Part 2(iii) below, or because their relative utility from home and other consumption changes (this is the cannot pay case).

[23] Notice that as the bank's ability to punish defaulters declines –μ falls – fewer borrowers automatically repay. Consistent with this result, Countrywide instituted a loan modification program but found that it increased the probability of default because defaulting borrowers expected to receive favorable modifications. See Christopher Mayer, et al, "Mortgage Modification and Strategic Behavior: Evidence from a Legal Settlement with Countrywide", 104 Amer. Econ. Rev. 2830 (2014).

scenarios are self-fulfilling: if every borrower believes that widespread default is likely, many borrowers will default because they believe they can escape monitoring.

To make the borrower's decision more precise, we introduce the concept of "monitoring tolerance": the minimum probability of being monitored immediately such that the certain surplus from repaying equals the expected surplus from defaulting and not being monitored. This minimum probability is denoted $\lambda_R\{Y\}$ and is defined by the expression,

$$Y - R = (1 - \lambda_R\{Y\})\mu Y$$

The left hand side of the expression is the borrower's certain surplus from repaying (her value less the price); the right hand side is the borrower's expected surplus from defaulting (the probability the defaulting borrower is not monitored immediately times the return when default ultimately catches up with her).

To see how a borrower's monitoring tolerance functions, let a representative borrower reason introspectively as follows: (i) borrowers like myself are simultaneously deciding whether to default or to repay; (ii) there are many borrowers so whether I – the representative borrower – defaults or repays has no measurable effect on the probability that other borrowers are monitored; and (iii) borrowers with higher returns from owning homes than me – those with a lower monitoring tolerance -- are less likely to default than I am because they have more to lose than I do. Therefore, because the probability of being monitored, P, is constant and is the same for all borrowers (it is K/D), I, and each borrower like me, understands that each of us is better off repaying *only* when the monitoring probability exceeds our monitoring tolerance. In consequence of this strategic reasoning, there must exist a "cut-off" borrower type $\lambda_R\{Y'\} \geq P$ such that borrowers with returns higher than the cutoff borrower type repay – for them, $Y \geq Y'$ -- and borrowers with returns lower than the cutoff borrower type will default – for them, $Y \leq Y'$.[24] Finally, because P falls as D -- the number of defaulters -- increases, the cutoff borrower type is more likely to lie above the monitoring probability – i.e., there will be *more strategic defaults* – as borrowers come to believe that D is large.

The bank can respond to this contagion effect by unwinding uncertainty among the borrowers regarding how widespread default will be. The bank reduces uncertainty by coordinating loan repayments. To illustrate, let the bank plan to make 100 loans to borrowers: it sets the repayment amount at R=10 and then screens potential borrowers for their ability to

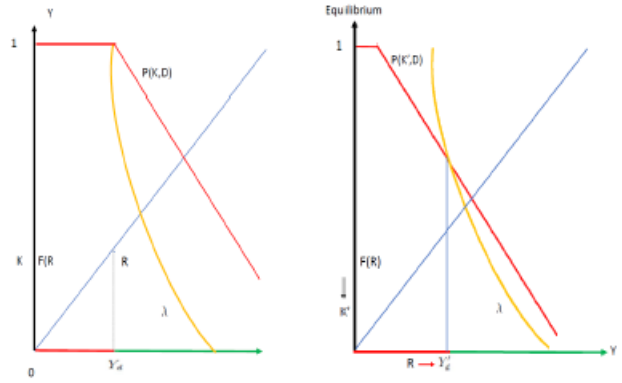
[24] This argument can be stated more formally. Given the terms $\tau=(I,R,\mu,K)$ of the debt contract, there is a unique equilibrium to the enforcement game between the bank and borrowers, where borrowers with $Y < Y'(\tau)$ default and borrowers with $Y \geq Y'(\tau)$ repay. See Lewis and Schwartz (online appendix); Jozef Sakovics and Jakub Steiner, "Who Matters in Coordination Problems?", 102 Amer. Econ. Rev. 3439 (2012); other references.

repay. When loans are made, the bank announces its enforcement capacity, which is K= 10: the bank can immediately monitor up to 10 defaulting borrowers. The bank also explains that, when it carefully screens borrowers, borrower private returns – Y -- are uniformly distributed on [0,100].[25] To complete the illustration, the bank discloses that μ =.5: the bank will modify the loan of a borrower who defaults and is not immediately monitored such that the borrower can retain 50% of her realized return.

Turning to what the borrowers in this illustration will do, 10% of the borrowers -- those with returns below 10 -- automatically default; for them, R > Y. Similarly, 80% of the borrowers -- those with returns above 20 -- automatically repay.[26] Borrowers with returns between 10 and 20 have a strategic decision to make. Using the Expression for the borrower's monitoring tolerance, when μ = .5, R = 10 and the illustrative borrower's return Y' = 11, the borrower's monitoring tolerance, $\lambda_R\{Y\}$, = .81. If the borrower believes that she will be immediately monitored with a lower probability than this, she will strategically default. But when K/D = 10/10, the monitoring probability P = 1. Hence, every borrower will repay. On the other hand, were K = 5, P = .5, so borrowers whose returns are between 10 and 13 will strategically default (their monitoring tolerance is above .5).

We illustrate these results with Figure 1.

Figure 1A Figure 1B



In Figures 1A and 1B, the 45° line out of the origin is the required repayment R. Figure 1A depicts a bank with the capacity immediately to monitor K = 10 borrowers. Borrowers with

[25] For clarity, in a uniform distribution every return is equally probable.

[26] By the expression above, borrowers automatically repay when their return exceeds $\frac{R}{1-\mu} = \frac{10}{.5} = 20$.

returns between 0 and 10, which equals Y_d , automatically default. Borrowers with greater returns repay because the monitoring probability, P=1, exceeds their monitoring tolerance. To see this, realize that the red (linear) probability to monitor schedule P(K,D), which is a function of K, lies above the yellow (convex) monitoring tolerance schedule λ, which is a function of the borrower's return Y, for every value of Y above Y_d. Figure 1B depicts a bank with the resources to monitor only K=5 borrowers. Now the probability to monitor schedule is below the monitoring tolerance of some borrowers. These borrowers gamble on default and renegotiation rather than repay and realize the certain but lower return. The Figure thus shows that banks with fewer monitoring resources induce more able-to-pay borrowers to default.

(ii) <u>The Impact on Quality of Loan Origination when Loans are Sold to Intermediaries and the Intermediation Chain Lengthens</u>

In our example, the bank chooses the amount to invest in pre-screening borrowers (I) the repayment amount (R), and the bank's monitoring capacity (K) in order to minimize its costs of supplying good quality loans to buyers at prices the buyers are willing to pay. When operating in a competitive market, the optimal bank contract is subject to the constraint that the money the bank lends and the bank's investment and monitoring costs equal the bank's expected return from borrowers that repay plus the bank's return from foreclosure and from renegotiating with borrowers it does not immediately monitor. In order to solve its maximization problem and to satisfy the breakeven constraint, the bank thus has to anticipate how borrowers will behave given the relevant variables (Y, K, μ, D, R), and then to react optimally to what borrowers actually do.

When the originating bank bundles loans into a portfolio and sells the portfolio to a financial intermediary, the socially optimal contract to sell these contracts would cause the bank to act as in the model here. Suppose, however, that the actual contract was aggregated: it warranted that the bank engaged in efficient screening for each loan but the intermediary buyer could not prove breach. Anticipating this outcome, the bank would reduce its investment in screening so as to earn positive profits. Reducing screening would result in a lower quality borrower pool: more borrowers would be in the automatic default market segment. The monitoring responsibility, however, would lie with the portfolio buyer. Let this buyer's monitoring capacity, and its ability to renegotiate, *equal* that of the originating bank: that is, let K be invariant to which entity holds the loans. Nevertheless, there would be more strategic defaults. The larger number of automatic defaulters would cause the intermediary buyer's monitoring probability to be lower than the originating bank's monitoring probability. This is because P = K/D so when D increases, P must fall. And the lower the monitoring probability is, the more likely the cutoff borrower type is to exceed it. Figure 1B illustrates this outcome.

Therefore, when an originating bank reduces its investment in screening, there will be more automatic *and* more strategic defaults, even if the initial portfolio intermediary buyer has the same monitoring capacity as the originating bank and has the same ability to renegotiate with strategic defaulters. But the intermediary buyer will not and did not have the same ability in the 2007-08 credit crisis (and does not today). The buyers did not know the borrowers or what the gains from foreclosure in particular markets would be: the intermediaries, that is, lacked essential "local knowledge" which the originating banks possessed. In the actual event, few initial intermediary and later portfolio buyers monitored or renegotiated. They delegated this responsibility to "servicers". The servicers, however, were responsible for administering many portfolio bundles from disparate originating banks. Their capacity to monitor individual loans was slight relative to the total number of loans they held, and they too lacked the local knowledge and monitoring capacity required to renegotiate effectively. [27]

(iii) Contagion in Context

In the model, a fraction of borrowers automatically defaults, another fraction automatically pays and the rest decide whether to default or to pay. [28] Three variables influence the strategic decision: the borrower's type (i.e., the value she derives from her home); the fraction of value a defaulting borrower who is not monitored can retain; and the probability with which the borrower believes she will be monitored.[29] These factors more strongly incline

[27] See note 18, supra, for a further description of how servicers performed.

[28] A defaulting borrower may incur reputational and other nonpecuniary sanctions. These sanctions are commonly referred to as "stigma", and are thought to reduce the probability of strategic default. See Martino Ricci and Patrizio Tirelli, "Subprime Mortgages and Banking in a DSGE Model", Dems Working Paper Series No. 366 at 10 (Department of Economics, Management and Statistics, University of Milan 2017). We do not model the stigma motive here, but we note that persons are more likely to attribute an agent's performing an action to circumstance rather than character when many agents perform the action. Hence, a borrower who defaults is less likely to be considered a bad actor when many similarly situated borrowers default. These authors also observe, consistent with the model here, that the default rate in the subprime market increased from about 6% to over 16% during the great recession, and note that many defaults are strategic. Similarly, the number of loans in a specific quarter that are in foreclosure as a percent of total loans rose from roughly 1% before 2006 to 4.6% in 2010. Jeffrey P. Cohen, Cletus C. Coughlin and Vincent W. Yao, "Sales of Distressed Residential Property: What Have We Learned from Recent Research", Federal Reserve of Saint Louis REVIEW 159, 164 (3rd Quarter 2016).

[29] Borrowers may be thought to have an incentive to default when the value of a home falls below the present value of their mortgage payments, but this incentive is weak. By revealed preference, a borrower with a mortgage prefers to live in a home. Hence, the strategy of defaulting on home loan one in favor of buying another home at the current low price with home loan two would only pay if the borrower could get home loan two. But walking away from home loan one would make lenders reluctant to extend home loan two. As a consequence, it is borrowers that can pay who may default strategically. Data also suggest that an underwater home price was not a leading cause of default during the past recession. "We find that home equity has to turn deeply negative before most homeowners will exercise their default 'option …. In particular, we estimate that the median borrower in our sample does not exercise the default option until his housing equity drops to -74% … which equates to a loan balance … of $348,000 on a $200,000 house.", Neil Bhutta, Jane Dokko and Hui Shan, "Consumer Ruthlessness and Mortgage Default During the 2007 to 2009 Housing Bust", 72 J. of Finance 2433, 2433-34 (2017); "Recent studies … suggest that affordability shocks such as unemployment and income shocks are the economically more important

a borrower to default strategically in worse states of the world. Regarding the first factor, the borrower's ex post value may differ from the value that induced her to borrow. When the economy experiences a negative shock, the supply of houses is increasing while the demand for houses is falling, which implies lower house prices. The borrower thus has less to protect by paying: that is, Y can be lower ex post than it was ex ante. The lower the buyer's return, the more likely the buyer is either to default automatically or strategically. Regarding the second factor, foreclosure is less profitable to the bank in a falling market, so the bank may be more willing to yield value to keep a borrower in her home. In the model's terms, μ, the fraction of home value the defaulting borrower can retain, can increase in hard times. And as μ increases, the return to strategic default increases.

The economic situation was unstable during much of the credit crisis. The value of residential property was falling and more borrowers were on the precipice of being forced to default. In turn, this caused solvent borrowers to re-assess their commitment to repay. But because portfolios were sold, unlike in the short intermediation chain, *it was impossible* for originating banks to coordinate the beliefs of their borrowers regarding repayment. The inability to coordinate was important. This is because there is an important relation among the three relevant variables. Borrowers have incentives to default, independently of other borrowers, when the borrower derives less than anticipated value from her home (Y falls) and when the borrower can keep more of the home's value (μ increases). But when the borrower recognizes that the increased incentive to default that she faces *also faces every other borrower*, the representative borrower will believe that the increase in defaulters will cause P to fall. And the lower borrowers believe P to be the more likely borrowers are to default strategically. This is the contagion effect. Mistakenly aggregated contracts, we next show, among their other flaws, worsened the contagion effect because the lack of screening these contracts facilitated increased the portion of automatic defaulters, which stressed banks' (short run inelastic) monitoring capacities.

3. The Institutional Context and the Enforcement Difficulty

This Part discusses in greater depth the differences between contracts to sell goods and contracts to sell contracts that led to the defaults Part 2 modeled. Beginning with contract law, three contract law reasons help to explain why originating banks and initial intermediaries mistakenly aggregated contracts to sell contracts. These follow from three implicit but seldom

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factor in explaining mortgage default with extremely large falls in housing equity required before 'strategic default' becomes likely." Nathan B. Anderson and Jane Dokko, "Liquidity Problems and Early Payment Default Among Mortgagees", 98 The Review of Economics and Statistics 897 (2016). Also, in the 1990-91 recession, only 6.4% of Massachusetts borrowers defaulted when they had negative equity. See C. L. Foote, K. Gerardi and P.S. Willen, "Negative equity and foreclosure: Theory and evidence", 64 J. of Urban Economics 234 (2008). These papers do not discuss contagion induced default.

remarked premises on which contract law largely rests: the "individuation premise", the "isolation" premise and the "risk location" premise. The individuation premise is best explained by considering two cases: (a) the goods bundle is never disaggregated into its constituent units; (b) the goods bundle is ultimately disaggregated. Starting with case (a), assume that the bundle is homogeneous: wheat, coal, iron ore, oil. In this case, contract remedies scale and breach (usually) affects every unit in a multi-unit sale in the same way. Beginning with scale, let a farmer sell N bushels of wheat to an intermediary wholesaler. The wholesaler values each bushel at v, which is the expected price to a flour company; hence, every bushel is worth the same to the wholesaler as every other bushel. The contract price per unit is p_k, so the wholesaler expects to realize its net gain per bushel times N; in notation, the gain is $N(v - p_k)$. If the seller does not deliver, this is the wholesaler's expectation interest. To see how the law compensates the breached against wholesaler, realize that the wholesaler initially would purchase N bushels of wheat at the current market price per bushel of p_m from another seller in order to comply with its contracts with flour companies. The wholesaler's legal remedy for breach is the difference between the current market price of one bushel and the contract price, multiplied by N.[30] The wholesaler's payoff after its repurchase thus is the difference between what wheat is worth to him and the higher price he paid after breach *plus* the legal damages: $N[(v - p_m) + (p_m - p_k)] = N(v - p_k)$, where the first term in brackets is the wholesaler's gain on repurchase and the second term is damages. The payoff equals the wholesaler's expectation. The contract remedy thus scales because it fully compensates the wholesaler for *any* value of N from one to a thousand.[31]

To see why contract remedies do not scale when parties make an aggregated contract to sell contracts, let N = 2: there are two units – two mbs – in the portfolio. The intermediary buyer pays P for the portfolio so the contract price per mbs unit is $P/2 = p_k$. Denoting one contract f_i and the other f_j, the buyer expects to realize the face value of each loan less the unit price, or $f - p_k$. If the originating bank breached a warranty as to a loan, the damages would be the difference between the value of the particular loan if it had performed and the payments

[30] UCC §2-711. For an analysis, see Alan Schwartz and Robert E. Scott, "Market Damages, Efficient Contracting and the Economic Waste Fallacy", 108 Colum. L. Rev. 1610 (2008).

[31] Damages also scale when parties trade goods such as the washing machines in the Introduction's example. The buyer's expectation would be the value it would derive from one compliant machine less the price: v – p. The buyer's damages for a warranty breach equal the difference between the value of the machine if it had been as warranted and the value of the breached machine: v_b. See UCC §2-714. Hence, the buyer's payoff if the seller breaches a warranty is $(v - v_b) + v_b - p = v - p$. The first left hand side term is damages, the second term is the value of the delivered breached machine and the third term is the price. For the reasons given in the Introduction, breach – the failure of the machine to meet the warranty standard – usually affects every unit in a goods bundle in the same way. Hence, the buyer's payoff from breach when it purchases a bundle of washing machines is $N[(v - v_b) + v_b - p] = N(v - p)$.

the borrower made under that loan.[32] Thus, if the individual borrower made payments of x_i on loan f_i, the buyer's payoff on the loan would be $x_i + (f_i - x_i) - p_k = f_i - p_k$, where the first term on the left hand side is the borrower's made payments on loan i and the second term is the damages. The damage measure thus protects the buyer's expectation for loan i but it *does not* scale. The portfolio buyer expects to realize $f_i + f_j - P = \pi$ on the portfolio. But $2(f_i - x_i) - P \neq \pi$ unless $fj = f_i$ and $x_j = x_i$. In words, multiplying the damages on any one breached loan by the number of loans in the portfolio will over or under compensate – will not equal the buyer's expected return of π -- unless the two loans are for the same face value and the borrowers made the same number of payments under them before defaulting. This condition is unlikely to be satisfied because each portfolio loan is written on a different home with a different borrower and each borrower likely defaults at a different point in the repayment schedule. Contrasting the aggregated contract with the wheat contract, the buyer under the aggregated contract does not value each unit the same as every other unit, and the damages for breach of each unit are not the same as the damages for breach of every other unit. As a consequence, the portfolio buyer under an aggregated contract must establish damages individual contract by contract.

The second assumption that constitutes the individuation premise, that breach usually affects every unit in a multi-unit sale in the same way, also fails for aggregated contracts to sell contracts: breach may affect the constituent contracts to different degrees. The Introduction made this point so we briefly consider two more examples here. In the mbs contract, the originating bank promised the initial intermediary portfolio buyer that the bank would carefully screen potential borrowers to ensure that they were good risks, but some originators slighted screening. As a result, borrowers who would have passed an optimal screen received loans but borrowers who would have failed an optimal screen also received loans. The "breached loans" failed to different degrees (some unqualified borrowers made fewer payments than others). The second example is a sale of credit card receivables. The issuers also promised later portfolio buyers that they would screen applicants for cards but some issuers made suboptimal screens. As a result, some persons who received cards, or cards with high limits, would have passed an optimal screen but other persons who received cards, or cards with high limits, would have failed an optimal screen. These "breached" issuing decisions likely also failed differentially: some questionable card holders made timely payments but others did not.

[32] This is the UCC equivalent to damages for breach of warranty. Actual sellers wrote this damage measure into their aggregated contracts and made it the intermediary buyer's exclusive remedy. See note 12, supra. Courts have rejected plaintiff trusts' claims for "general contract damages", restricting them to the individual loan repurchase remedy. See *Nomura Home Equity Loan, Inc. v. Nomura Credit & Capital Inc.*, supra note 5, and *Deutsche Alt-A Securities Loan Trust, Series 2006-0A1, by HSBC Bank USA, National Association, as Trustee v. DB Structured Products, Inc.,* 958 F. Supp2d 488 (S.D.N.Y. 2013).

An important premise underlying contract remedies – the individuation premise – thus does not hold for aggregated contracts to sell contracts. The remedies do not scale for breach of the aggregated contract so the buyer must establish damages unit by unit and breach affects the contracts in a portfolio differently so the buyer must establish breach unit by unit. [33] Contract law thus does not perform its facilitative function in respect of contracts to sell contracts. Rather, the law faces the parties with a difficult choice: to aggregate inefficiently but in accordance with the law or to create a novel portfolio contract that courts may not enforce. As said, the originating mortgage and credit card banks made the former choice: they *warranted* to the portfolio buyer that the banks made *each loan* in accordance with standard lending practice. Portfolio buyers could not enforce these contracts because it would have been too costly for a buyer to establish damages and warranty breach loan by loan.[34]

Contract law's isolation premise supposes that while parties may behave strategically towards each other – a seller may threaten breach to exact a higher price – neither party responds to the strategies of third parties when deciding whether to perform or to breach. For example, when parties trade a machine that the seller specialized to the buyer's needs, the buyer's decision to breach turns on the buyer's ex post circumstances, not on the decisions of other buyers to breach their contracts. In contrast, there are strategic complementarities in lending contexts. Individual borrowers take the incentives of other borrowers into account when deciding whether to perform. As the Introduction and Part 2 showed, a borrower's expected payoff from default is increasing in the probability she assigns to other buyers defaulting. Put more generally, the buyer of a portfolio of contracts faces a problem of

[33] Both assumptions usually fail to hold for the same case. Thus, mortgage contracts require the borrower to live in her home and best practice requires the originating bank to check. Suppose an originator did not check, and lent both to borrowers who lived in their homes and those that did not. By not checking, the originator breached the best practice warranty it made to the initial intermediary as to all borrowers, but the breach could not cause the default of borrowers who lived in their homes: the portfolio buyer's damages *from the warranty breach* on such a loan would be zero. Calculating the portfolio buyer's total damages by multiplying zero by N (the total number of portfolio loans) would undercompensate the buyer, however, because some borrowers probably did default in consequence of not living in the homes they bought. For example, a speculator is more likely to abandon a home when the mortgage on it is underwater than a borrower whose home it is. Turning to such a speculator's defaulted loan, the portfolio buyer's damages would be the difference between the payments the speculator made and the loan's face value. But multiplying these damages by the number of loans in the portfolio would over compensate the intermediary buyer because some defaulting borrowers did live in their homes.

[34] Two commentators recently explained: "Other [warranty] breaches are significantly harder to prove. The facts may require further investigation into hard-to-obtain documents outside of the purchaser's possession …. The cases alleging false loan-to-value ratios or appraised values require reconstructing the actual appraised value at origination, which is subject to debate and difficult to do. … Buyback disputes over loans that supposedly were allowed to depart from underwriting standards due to compensating factors can be particularly messy to litigate." Patricia A. McCoy and Susan Wachter, "Representations and Warranties: Why they did not stop the crisis", Unpublished Manuscript (2016 at 17).

strategic default because the promisors of the constituent contracts consider what other promisors will do. The buyer of a set of goods cannot face this problem because goods cannot coordinate with each other.

Because courts adjudicate cases one at a time, contract law is structurally unequipped to respond effectively to contagion effects: that is, to serious failures of the isolation premise. A statutory fix, we later argue, sometimes is needed. We note here, however, that the mistakenly aggregated agreements that contract law encourages exacerbate the contagion effect because, in order to enforce its contract, the intermediary portfolio buyer must investigate each nonperforming loan to see whether breach caused the loan to fail and, if so, the extent of the breach caused loss. The intermediary buyer, however, holds *more loans* than the originating bank (it buys bundles) and it is *less equipped* to investigate loan failure because it has less local knowledge. As a consequence, the probability that a borrower can escape the consequences of default is greater when the originating bank securitizes its loans. In the model's language, the contagion effect is greater – i.e., borrowers will believe that widespread default is more likely -- when the borrowers realize that the bank that wrote their mortgages is not the entity that holds the mortgages.[35]

Turning to the risk location premise, in contract law the default imposes exogenous risk on the buyer. Hence, when the seller makes a warranty the buyer must show that that the seller breached the warranty and that the breach caused a material portion of the buyer's loss. This rule follows from the premise that a warranty's purpose is to induce the seller to invest in compliance. Because efficient compliance could not reduce exogenous risk, the seller is not liable for losses that the materialization of an exogenous risk caused unless the contract expressly so provides. [36] A court would apply the usual rule to the aggregated contracts analyzed here: the intermediary buyer would have to prove that the originating bank's failure to write a loan in accordance with best practices caused a material decline in loan value or caused default. And if the originating bank, in response, adduced plausible exogenous causes of such failures, the portfolio buyer would have to meet this showing with contrary evidence

[35] Loan servicers, who administered many portfolio loans, often preferred foreclosure to renegotiation. An unremarked benefit of this widely regretted practice (see note 18, supra), is that there likely were fewer strategic defaults because the expected return to default fell. Returning to the model in Part 2, borrowers automatically repay when their return exceeds $R/(1 - \mu)$. As μ approaches zero – borrowers anticipate foreclosure always -- every borrower repays when $Y > R$: that is, strategic default almost vanishes.

[36] When a buyer carries the initial proof burden of showing that its damages from breach were material, the seller can show that some or all of these damages were the product of exogenous causes. For example, non-delivery is a breach but the seller is excused if exogenous events prevented it from performing. See UCC §2-615. Some New York lower courts also have held that, in a sale of services, if the promisee proves that breach caused a material part of its loss, the burden shifts to the promisor to establish exogenous factors that contributed to or caused all of the loss. See *Haven Associates v. Donro Realty Corp.*, 121 A.2d 504, 503 N.Y. S. 2d 826 (App.Div. 2nd Dept. 1986); *Special Products Manufacturing, Inc. v. Douglass*, 169 A.D. 2d. 891 (App. Div. 3rd Dept. 1991).

which, because the buyer was remote from the originating transaction, it would have difficulty finding.

To make these difficulties more concrete, suppose that a borrower defaulted because (a) he incurred excessive credit card debt and had to default on something; (b) he lost his job because (i) he was fired for incompetence; (ii) he was laid off because of a recession in his industry; (iii) he was laid off as part of a reduction in force when his employer was losing money; (iv) he was made redundant by a merger; (c) he incurred unanticipated medical expenses for himself or for his family; (d) he was liquidity constrained in consequence of (i) a divorce; or (ii) a property tax bill.[37] It is an open empirical question which of these defaults originating bank compliance with the best practice warranties would have prevented; and it is an open legal question which causes of individual obligor default would excuse a warranty breach in the portfolio sale context and which would not. As a consequence, litigating causation loan by loan would have been very costly.

It may be clarifying to see how the causation issue would present in litigation. Let an initial intermediary buyer identify a nonperforming loan and ask the originating bank to buy it back. The originating bank claims that its buyback obligation was not triggered because the borrower at issue actually defaulted in consequence of a merger that led to a reduction in force. A lender, the originating bank argues, could not reasonably foresee a merger in a particular buyer's industry. There apparently is no authority, in the portfolio context, regarding whether a merger that may have caused an individual borrower to default also would be a good ground for excusing the originating bank portfolio seller as to that loan. And if a merger would have legal relevance, the originating bank is in a better position than the portfolio buyer to gather evidence regarding whether it was the merger or something else that caused the loan not to perform ((the relevant company may be a large local employer). For these reasons, the merger defense likely would beat a portfolio buyer's summary judgment motion requiring the originating bank to take the loan back. Hence, just enforcing that particular loan would be costly. And because today several such defenses may be legally credible and there are many loans in a portfolio, the causation issue adds to the difficulty of enforcing an aggregated contract that required the originating bank to buy back particular nonperforming loans.

[37] Regarding these causes, a recent study suggested "that households experiencing an unemployment shock or a divorce have a three and two percentage point higher probability of deep [rather than shallow] default [which commonly leads to complete failure], respectively." Robert Kelly and Fergal McCann, "Some defaults are deeper than others: Understanding long-term mortgage arrears", 72 J. Banking and Finance 15 (2016) (large sample of Irish households). Also, "a one standard deviation increase in non-mortgage debts" materially increases the default probability. Id. at 16. In addition, borrowers facing a property tax bill shortly after taking out a loan have 2% to 6% higher default rates than borrowers whose tax bill comes ten to twelve months after origination.

As useful context, the risk allocation premise has been difficult to implement in sales of goods and services because courts there struggle with establishing causation when default may have several causes.[38] Commercial parties thus commonly create their own solutions. As examples, sellers time limit warranty or similar liability. Thus, if a contract to sell goods failed early in its life, because the goods did not work, the seller probably was at fault; if the contract failed later in its life, the buyer or events probably were at fault. The second standard solution to the causation problem is to write a force majure clause, which specifies verifiable exogenous events that correlate negatively with a seller's ability to perform. For example, force majure contracts excuse sellers that do not perform in plausible consequence of fire, flood or a major supply interruption.[39] Creating tailor-made clauses to excuse the seller of a contract to sell contracts seems at least as difficult – is probably more difficult – than creating these excuse terms. Contract law over time has developed guiding rules governing excuse for sales of goods and services, but the law has yet to develop guiding rules governing excuse for contracts to sell contracts.

To summarize, contract law is insufficiently facilitative in two very different ways regarding the contract to sell contracts. When the individuation assumption fails, it is very costly for the promisee to enforce its contracts. The law could encourage portfolio contracting by creating a portfolio default and by signaling that such portfolio contracts are enforceable. When the isolation assumption fails, the cost of enforcing each individual contract in a mistakenly aggregated contract to sell the portfolio does not increase, but this is misleading. In consequence of strategic defaults by borrowers, the *number of defaulters* can much exhaust a promisee's capacity to enforce the individual contracts that constitute the portfolio. Private law responses to isolation assumption failure thus may be insufficient.

Parties also aggregated contracts to sell contracts because they were less costly to buy. Under current accounting rules, an originating bank could book a portfolio sale as current revenue if it made an individuated contract. If the bank guaranteed the portfolio itself, however, the bank would have had to record a contingent liability on its books that would be amortized over time as the portfolio performed. The contingent liability would have reduced a bank's current reported income. As a consequence, banks were reluctant to guarantee portfolio performance. The parties thus faced a tradeoff: they could have made contracts that would have put the default risk on the originating banks, but at higher prices to the portfolio

[38] The doctrinal uncertainties that make establishing causation in a contracts action difficult when multiple possible causative factors were present are extensively described in Daniel P. O'Gorman, "Contracts, Causation, and Clarity", 78 U. Pittsburgh L. Rev. 273 (2017).

[39] Parties to acquisition agreements create specific carve outs qualifying the common term that implements the risk allocation premise: the term permits a buyer to terminate the deal if a material adverse event occurs. The carve outs identify particular exogenous risks whose materialization will not excuse the acquirer. See Ronald Gilson and Alan Schwartz, "Understanding MACs: Moral Hazard in Acquisitions", 21 J. Law, Econ. & Org. 330 (2005).

buyers. The parties' business model – rapid, inexpensive securitization – precluded this. That the resultant aggregated contracts were equivalent to no contracts at all was not widely recognized. And that no party to an aggregated contract to sell mbs considered that the widespread breach of such contracts could have systemic consequences also was not recognized. We therefore suggest that the accounting rules for revenue recognition should be rethought. The rules apparently have a disclosure rationale. Investors may be misled regarding a firm's financial strength if the firm books revenue today but a large contingent liability is associated with that revenue. We suggest that other forms of disclosure also could protect investors without creating the enforcement inefficiencies that aggregated contracts produce.

Regarding the bankruptcy reason, retailers that originate portfolio contracts sometimes agree to buy back a share of nonperforming loans: to that extent, a portfolio buyer is said to have "recourse" against the seller. These parties also face a tradeoff: the greater the recourse share is, the stronger the incentives are for the retailer to choose the consumer buyers carefully. On the other hand, the greater the recourse share is, the more likely courts are to characterize the transaction as a loan from the financer (ne buyer) to the retailer (ne seller)[40] The consequence of applying this reasoning in the securitization context is that the intermediary buyer, or its transferees, would have to participate in the seller's bankruptcy as a secured creditor. The SPV or trust that ultimately comes to hold portfolios thus would not be "bankruptcy remote". It is well known that bankruptcy remoteness reduces the cost of contracts to sell contracts; it is not well known that bankruptcy remoteness reduces the originating bank's incentive to write loans carefully. [41]

We have discussed the contract between the originating bank and the initial intermediary. The discussion also applies to the contract between an intermediary and a trust because the parties remade the best practice warranties that the originating bank made to the

[40] How the law decides whether a receivables financing is a sale or a loan is unclear: "Whether something is a 'sale' as opposed to a 'loan' is often a function of the transaction. If there is full recourse, the transaction is a loan … regardless of what the parties call it. If there is none, it is a sale. Whether one ounce, a quart, or a gallon of recourse is enough to cause the transaction to cross the line from sale to loan cannot be predicted with certainty …." James J. White and G. Eric Brunstadt, Jr., SECURED TRANSACTIONS Teaching Materials (4th Ed. 2013 at 365-66).

[41] An earlier literature discussed efficiency rationales for bankruptcy remoteness. The literature is summarized in Kenneth Ayotte and Stav Geon, "Asset-Backed Securities: Costs and Benefits of 'Bankruptcy Remoteness", 24 The Rev. of Financial Studies 1299 (2011), which argued that removing assets from a firm prevented inefficient continuance if the firm became insolvent. Another paper argued that removing assets from the firm permitted it to concentrate on monitoring the remaining assets. Edward M. Iaccobacci and Ralph A. Winter, "Asset Securitization and Asymmetric Information", 34 J. Legal Studies 161 (2005). These and earlier papers are not relevant to the moral hazard concern we discus because all of them "assume that the cash flows that are securitized are relatively insensitive to managerial effort." E.g., 34 J.L.S. at 171. The mortgage and other modern contracts we consider are highly sensitive to managerial effort. As the model in Part 2 above shows, the value of an mbs is importantly a function of originating bank pre-loan screening and post-loan monitoring.

intermediary.[42] A trust was less able to enforce these warranties than the initial intermediary because the trust was further removed from the original loan context and because trusts held "super portfolios" of many loan bundles. In addition, the intermediary's contract with a trust prevented the trust from initiating a suit for breach; rather, the trust could sue the intermediary only if a material minority (or sometimes a majority) of certificate holders requested it to sue.[43] This restriction created a collective action problem among the certificate holders. More importantly, as loan portfolios were sold along the distribution chain, the contractual information environment became more impoverished,[44] but, in respect of pre-loan screening, *the contracts did not change*.

In sum, parties wrote inefficient aggregated contracts to sell mbs portfolios for four reasons: in contract law, the failure of the individuation, isolation and risk location premises; in commercial and bankruptcy law, the rules defining when the acquirer of a contract (or a portfolio of contracts) is legally a "buyer" of the contracts or a "lender" to the originator of the contracts; in tax law, the accounting rules that determine in which accounting period the seller of a set of contracts is entitled to recognize revenue from the sale. The literature does not discuss the three contract law generative premises. The commercial and tax literatures discuss the contribution of bankruptcy remoteness and revenue recognition to the ability of individual borrowers and their banks to access the public capital market but do not discuss how these rules induced agents to make inefficient aggregated contracts to sell contracts. At least partly as a result of scholarly and decision maker neglect, agents in the originating markets acted as if the benefits from securitization were almost free, in the sense that the attendant costs were only the costs of creating and trading the portfolios. The benefits were not free, however, because the contracts that made the benefits possible could not be enforced against the originating banks, which meant that the banks sold loan portfolios for which they bore no legal responsibility. Hence, the banks had insufficient incentives to screen borrowers for credit-worthiness; and the portfolio buyers that came to hold portfolios had insufficient resources to

[42] A typical term provided: "The Assignor [i.e., the seller of a portfolio to a trust] hereby represents and warrants that to the best of the Assignor's knowledge, nothing has occurred in the period of time from the related Closing Date (as defined in the Agreement) to the date hereof which would cause such representations and warranties referred to in Exhibit A [attached to the contract and made atpart thereof] to be untrue in any material respect as of the date hereof." The contract is CMLTI 2006-WFI PSA, Form of AAR at §1(k). The AAR is an "Assignment, Assumption and Recognition Agreement". Trusts made these agreements with portfolio sellers. See also agreements cited supra note 12.

[43] See Diane E. Thompson, "Why Servicers Foreclose When They Should Modify and Other Puzzles of Servicer Behavior: Servicer Compensation and its Consequences", National Consumer Law Center, Inc. (2009 at p. 8).

[44] Gary Gorton observed that the "security designs that were necessary to make the subprime market function resulted in a loss of information to investors as the chain of structures – securities and special purpose vehicles – stretched longer and longer ….The chain [of portfolio sales] made valuation opaque; information was lost as risk moved through the chain." Gary B. Gorton, Misunderstanding Financial Crises __ (2012)

monitor and salvage the resulting degraded loan pools. Widespread credit availability, under the current rules, comes with excessive credit availability.

4. ***The Portfolio as Product***

Commercial parties securitized loans in order to permit originating banks to raise capital in the public credit market. This appeared to be a successful strategy, for a while, because the public investors believed that trust certificates resembled money, in the sense that both a holder of money and the buyer of a certificate could plausibly *assume* that the certificates had solid foundations. The Government backs money and mortgage backed securities backed the certificates. A trust held a very large number of mbs, which originated in various circumstances and locations. Portfolio diversification and the law of large numbers seemingly would ensure that a trust's super portfolios were worth about the face value of the loans in them. This view, however, *also assumed* that the underlying mortgages were written in traditional ways: that is, they were written after efficient pre-screens by originating banks. [45]

Part 3's argument that this assumption was incorrect rested on the claim that an aggregated contract to sell contracts essentially is unenforceable. Consistent with this claim, trusts and other buyers in the long intermediation chains *did not* attempt to enforce their contracts as written: that is, they did not attempt to establish warranty breaches *for individual loans*. Rather, as Part 4(i) next shows, these agents evidenced their recognition that the aggregated contracts were unenforceable by pursuing litigation strategies that would only have been apt had the agents written portfolio contracts. Part 4(ii) next considers how contract law would have treated a portfolio contract had the parties written it.

4. 1 Portfolio Litigation

The trusts pursued two "indirect" litigating strategies in suits against the portfolio sellers. The first, sampling, represented a trust's attempt to remain faithful to the aggregated contract the parties wrote. Under sampling, a trust selects (what its expert claims is) a representative subset of portfolio loans. The trust then fully evaluates each loan in the sample. Let the evaluation reveal that the seller breached best practice warranties on η% of the loans in the sample. A court, the trust argues, therefore should conclude that the originating bank breached those warranties on η% of loans in the full portfolio.[46]

[45] In the category of lessons not learned, commercial buyers of large home portfolios now use "drive by" appraisals by real estate agents or use appraisals created by appraisers in India who estimate home values by using Google Earth. The proponents of these large portfolio sales say that "when pooling thousands of houses in an investment vehicle, individual valuations that are too high or too low tend to balance out." See "Investors Turn to 'Drive By' Home Appraisals, Adding Risk", Wall Street Journal January 22, 2018, pp. 1, 2.

[46] The sampling strategy is extensively described in *Assured Guaranty Municipal Corp. v. Flagstar Bank,* FSB, 920 F. Supp. 2d 475 (S.D.N.Y. 2013). Every portfolio seller remade the warranties that were made to it. Thus, the ultimate

Some courts permitted a sampling cause of action to defeat a defendant's motion to dismiss, but no court has found for a trust in an actual case.[47] This likely is because the contracts and the law apparently precluded a sampling claim. The contracts required a trust purchaser to identify a defective loan so that the portfolio seller could take the loan back. Suppose then that a court granted that a portfolio contained η% of breached loans if a representative sample contained η%. Nevertheless, the seller's obligation under the contract was to buy back *each breached loan* for face value less payments made[48]; and sampling could not reveal *which* of the loans in the larger universe had been created defectively and *whether* breach caused those particular loans to default. Put another way, sampling can prove breach for aggregated contracts to sell goods because the goods are relevantly identical but it is difficult for sampling to prove breach for aggregated contracts to sell contracts because the contracts are relevantly different. As a consequence, the conclusion that the portfolio seller tendered bundled loans, rather than a loan portfolio, would be hard for a court to resist.

The trusts' second litigation strategy was to ask courts to resist just that conclusion. To understand the second strategy, in a simple version, suppose that a trust purchased a portfolio L with face value $L. Next assume that the materialization of an exogenous risk would have reduced each loan in L by $0 \leq \omega \leq 1$. Finally, suppose that another value affecting factor, if it were present, would have reduced each loan's value by a further $0 \leq \delta \leq 1$. The portfolio's observed value, denoted $\hat{L}$, should be $L[(1 - \omega)(1- \delta)]$. Thus, if neither the exogenous risk nor the other factor was present (both ω and δ = 0), the observed value should equal the face value: $\hat{L}$ = L. Now suppose that an exogenous risk did materialize that would have reduced the portfolio's value by 20% (i.e., ω = .2). The observed portfolio value, $\hat{L}$, should equal .8L. But suppose that, in fact, $\hat{L}$ equaled .6L. Then the other factor necessarily also was present with magnitude δ = .25. On this version of the strategy, a court should take the other factor to be the originating bank's breach of its best practice warranties; and by implication the breach of the initial intermediary when it reaffirmed those warranties in its sales to the trusts. A trust's damages therefore should be $(1 - \omega)L - \hat{L}$. For example, if ω = .2, L = 100 and $\hat{L}$ = 60, the intermediary portfolio seller should pay 20 to the trust as damages. The intermediary would use the same litigating strategy to collect 20 from the originating bank, which then would have to pursue defaulting borrowers.

This litigation strategy, in effect, *treats the portfolio* as the product the parties traded and asks a court to award standard contract damages. The litigation strategy, however, also ran into the actual contracts' wording, which said that the originating bank and the initial

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claim to which sampling is relevant is that an originating bank breached best practice warranties on η% of each portfolio it created.

[47] See id.

[48] See note 10, supra.

intermediary traded individual loans, not loan portfolios. Also, as suggested above the strategy may over-compensate portfolio buyers. This is because the strategy implicitly defines endogenous risk as *every unexplained factor* that could cause a portfolio to lose value. For example, suppose that a trust identifies a recession as the 20% exogenous risk but portfolio value fell by 25%. Suppose also that a particular loan in L defaulted because the individual obligor died. The originating bank did not warrant against death, but the second portfolio strategy would count that default as breach caused because it would permit the buyer to recover 80% or expected portfolio value. Finally, the occurrence of a major endogenous risk is analogous to what the standard acquisition contract to buy a company calls a "material adverse event"; the buyer is excused if such an event occurs. The aggregated contracts also contained MAE terms *but* as applied individual loans rather than to the portfolio as an independent entity.

In sum, the two portfolio litigation strategies foundered on the same rock. Portfolio buyers sought to enforce aggregated contracts with litigation strategies that presupposed that the parties wrote portfolio contracts. This raises the question how contract law would treat actual portfolio contracts.

4.2 Portfolio Contracting and Contract Law

A portfolio combines several items under one contract, where the items are sufficiently similar to be efficiently bundled but sufficiently dissimilar to be differently affected by a seller's breach. The similarity among the units implies that the effects of breach are positively correlated across the units, but the dissimilarity among the units implies that the correlation is imperfect. It is imperfect correlation that flaws the aggregated contracts to sell loan bundles because, under them, a disappointed promisee must analyze every nonperforming contract (or analyze every contract to see which are not performing).

Two contract types could respond to these difficulties. The first would have required the originating bank to take back nonperforming loans at face value less payments made. This contract would have cured two defects of the mistakenly aggregated contract: the bank would have owned nonperforming loans, which it would have had a comparative advantage at saving or foreclosing. And the initial intermediary would not have had to prove a warranty breach to recover. On the other hand, two defects would remain. The intermediary buyer would have to identify nonperforming loans, and as to them the causation difficulty would remain. Under the legal default (the risk allocation premise), the intermediary would have had to prove that *each* of the nonperforming loans failed largely for endogenous reasons; and to meet originating bank evidence, if introduced, that exogenous causes actually were responsible for those failures.

Thus, what we call a "pure" portfolio contract – a contract in which the unit of sale is the portfolio itself – would have created better incentives for originating banks to make good loans.

Using mbs sales as an example, a portfolio contract would warrant the originating bank's practices in creating the mbs portfolio rather than warranting the compliance with those practices in connection with every portfolio loan. Under the portfolio contract, the originating bank would have to buy back a portfolio that materially underperformed.[49] This contract would make the originating bank the (residual) claimant on the poorly performing portfolio. The bank would then invest optimally in pre-loan screening, just as it would have done had it retained the portfolio.

Current contract law does not facilitate the use of either contract type. Rather, the law implements the individuation premise: contract remedies compensate a disappointed promisee on the assumption that the promisee purchased one unit or a homogeneous set of units. For example, under UCC §2-713, a disappointed buyer is entitled to recover "the difference between *the* market price (p_m) at the time when the buyer learned of the breach and *the* contract price (p_k)."[50] Therefore, the buyer cannot recover $N(p_m - p_k)$ as damages unless the units are identical. Similarly, the buyer can get specific performance under §2-716 "where *the goods* are unique", which implies that all of them must be unique in the same way. And under §2-714, the buyer's damages for a breach of warranty are the difference "between the value of the goods accepted and the value they would have had if they had been as warranted". This implies that an actionable warranty breach must affect all units in the same way, if the parties traded more than one, an interpretation that is confirmed by the accompanying comment's reference in the singular to "*the* non-conformity". Finally, installment sales are regulated under UCC §2-612, which provides, in subsection 3, that when there is a "default with respect to one or more installments [that] substantially impairs the value of the whole contract there is a breach of the whole". The comment explicitly rejects the interpretation that there is breach if the buyer can infer from an installment default that the seller is generally unreliable. Hence, a default with respect to an installment could "substantially impair the value of the whole contract" only if the parties contracted to trade one product parts of which were to be delivered in installments, or the parties intended identical goods to be delivered in installments.[51]

Finally, recall the trusts' second litigation strategy, which in a portfolio valuation inquiry supposed that the unexplained residual was the consequence of a warranty breach. There is no

[49] A pure portfolio contract could delegate to a court the task of defining materiality, as parties to acquisition contracts delegate to courts the definition of a material adverse event. Part 6 below suggests defaults that also could govern portfolio contract performance.

[50] This paper uses buyer remedies as an example; seller remedies are symmetric.

[51] Contract theory is similar to contract law in its adoption of the individuation premise. Theoretical analyses commonly assume that parties trade one unit or a set of homogenous units See generally Patrick Bolton and Mathias Dewatrapont, Contract Theory (2005).

authority for that treatment. Rather, as the UCC sections quoted above imply, a buyer must prove which nonperforming loans were the consequence of which warranty breaches.

The damages rules, however, are themselves defaults, so there is a question whether parties could contract out of them. Contract law permits parties to create their own damage remedy if the specified remedy reasonably approximates the promisee's expected gain under the contract.[52] The contract creates the expectation, however. Thus, if an originating bank warranted its lending practices, so that breach would entitle the buyer to recover for material portfolio value declines, the buyer could reasonably expect such warranty protection. Whether a court would accept this view of the buyer's expectation is unclear because the question is novel. We later argue that contract law should clarify the issue by adopting a set of portfolio defaults. Because these would be standards – a "material decline" – parties would probably define materiality for themselves and specifically distinguish exogenous from endogenous risk. Hence, a portfolio default's likely legal contribution would be to encourage courts to enforce the pure portfolio version of the contract to sell contracts.

In sum, current contract law may partially explain why portfolio contracts were not seen. Given the damage rules and contract law's proscription of penalties, the lawyers may have questioned whether portfolio contracts would be enforceable. In their place, the lawyers pursued the strategy of replicating contract law's individuated damage rules by aggregating contracts to sell mbs portfolios. This would have been an understandable mistake, given that very large mbs portfolios had not been traded before.

5. Equilibria in Securitization Markets

We briefly set out here two related equilibrium conjectures that may help to explain the existence of these aggregated contracts. The first conjecture follows from the possible contagion effect introduced in Part 2 and elaborated in Part 3. Portfolio contracts would partially ameliorate the contagion effect, by putting more risk on originating banks, but are unlikely to eliminate it altogether. Because, we show below, aggregated contracts are less costly to make, and because a contagion effect is always present, parties may have preferred to make the more familiar aggregated contracts. The second conjecture, analyzed in this Part, holds that there are states of the world in which mistakenly aggregated contracts would maximize the intermediary banks' profits, though that they are unenforceable would seriously bite in bad states of the world.

We denote an aggregated contract as "weak" and a portfolio contract as "strong". Neoclassical analysis implies that parties would only trade strong contracts in equilibrium. To see why, suppose that originating banks initially offered weak contracts. If every originating

[52] See UCC §2-718.

bank were then to switch to a strong contract, the intermediary's demand curve would shift out by more than the supply curve would shift up (because strong contracts are efficient relative to weak ones). As a result, (a) the price per portfolio would increase but more portfolios would be traded; and (b) consumer and producer surplus (i.e., the originating bank and intermediary buyer's gain) would increase. Hence, the equilibrium in which parties trade strong contracts should pareto dominate the equilibrium in which parties trade weak contracts; that is, everyone could be made better off in the "strong equilibrium". Actual parties traded the weak contracts, however.

Because a contract will not be traded unless someone wants it, the question is whether portfolio buyers – the banks and the trusts – could have preferred weak contracts to strong ones even if it had been profitable to write the strong contracts.[53]

To see why agents could have held this preference we assume:

A_1: Originating banks (and trusts) make contracts independently of the choices of other purchasers, but *in awareness* of the others' choices;

A_2: Originating banks will supply larger (or more) portfolios under weak contracts than under strong contracts.

A_3: The initial intermediaries, who bought portfolios from the originating banks, and the trusts to whom they resold portfolios, experience economies of scale in selling portfolios or in selling certificates in investment vehicles that hold portfolios.

A_4: Weak contracts impose greater risks on intermediary buyers and trusts than strong contracts.

Respecting the realism of these assumptions, A_1 is implied by the large number of portfolio purchasers; A_2 follows from the ability of originating banks to degrade lending standards and to have relatively few repurchase obligations under weak contracts; A_4 holds because it is the converse of A_2; and A_3 rests on the premise that intermediaries and trusts incur large fixed costs to set up a portfolio trading business, but incur low marginal costs when trading particular portfolios; hence, these sellers' gains are increasing in the number and size of the portfolios they sell.[54] Consistent with this assumption, actual market portfolios were very large.

[53] Because the originator market was competitive, price equaled cost. Hence, the originating banks' contracts would adjust to reflect the seller banks' and trusts' preferences. We thus ask what these buyers wanted.

[54] Further to A_3, portfolios were sold under prospectuses and contracts but these documents came to assume standard forms. Hence, once the forms were set, a seller had primarily to change the numbers when selling another portfolio. Also, the cost to a sales person of selling a 2,000 loan portfolio were not much lower than the cost of selling a 10,000 loan portfolio, so a sales person should be given large portfolios to sell.

To see what these four assumptions imply, suppose that initial intermediaries buy portfolios under the strong contracts. A particular intermediary would have an incentive to defect from this equilibrium in favor of buying and reselling weak contracts because, A_2 implies, it could buy more portfolios and, A_3 implies, make more money selling them. If the risk of holding weak contracts is low, an intermediary could benefit from defection on net: the greater profits from increased volume may outweigh the increased risk. Hence, that every initial intermediary buys portfolios under strong contracts may not be an equilibrium outcome. Now let every intermediary buy portfolios under weak contracts. The *same conditions* that would induce an intermediary to defect from the all strong contracts equilibrium would keep the intermediary from defecting from the all weak contracts equilibrium. In particular, an intermediary that defected from the weak contract equilibrium would purchase fewer portfolios while not reducing the contracting risk per portfolio by enough to make the defection worthwhile. Hence, there is a reasonable market equilibrium in which intermediaries and trusts would only offer weak contracts though strong contracts are more efficient.

The important comparison is between the greater profits and the greater risks intermediaries and trusts would experience under the weak contracts. When the state of the world is expected to be good, the volume effect can dominate the risk effect. In good states, house prices rise and borrowers are employed so portfolio buyers that expect good states would also expect few defaults, to some extent independently of the contracts under which the banks purchased. Therefore, market participants in the "good period" before 2008 may have been "trapped" into playing the weak contract equilibrium.[55]

And to sum up, when the assumption that parties contract in isolation is relaxed, a slightly deeper purchase on the securitization market outcome of 2008 may be possible. To use the analysis here to speculate, because parties in the years before 2008 expected good states to materialize, it was profitable for them to write weak contracts; and because a bad state materialized, the resultant weak borrower pool produced a historically large number of defaults. As a consequence, the immanent implications of the mistakenly aggregated contracts were realized: the contracts, that is, were highly information sensitive all along (a portfolio buyer had to know a lot about the ultimate obligors to evaluate what it bought), but until the crash purchasers treated the contracts as if they were information insensitive. Uncertainty deepened, our analysis suggests, when market participants recognized that the contracts under which parties traded loan portfolios created insufficient incentives for parties to write good loans, and put the risk of bad loans on parties that could not maximize their value.

[55] The logic of the equilibrium analysis here is similar to that in Antonio Bernardo, Alan Schwartz and Ivo Welch., "Contracting Externalities and Mandatory Menus in the U.S. Corporate Bankruptcy Code", 32 J. Law, Econ. & Org. 395 (2016).

6. Policy Implications

Contract law has no rules facilitating use of the contract to sell contracts. Because the subject is new, and because we have not formally characterized portfolio contracts, we are tentative about its particular law reform implications. The basic legal theory, however, is clear: the law should attempt to maximize the tradeoff between putting risk on the entity that originates the contracts to be packaged and giving individual borrowers access to public credit markets. As should be clear from the above, current law does not recognize that there is a tradeoff to make. Rather, prior to Dodd Frank, the law put no risk on the originating entity in the service of reducing credit costs.[56]

We begin analysis of how to realize this tradeoff by suggesting how to extend contract law. When parties make a contract to sell contracts, the law should an implement an "aggregation premise": the subject of sale would be *the portfolio*, not the separate contracts that constitute the portfolio. [57] Three legal terms would help to implement the aggregation premise. First, the law should contain an implied warranty of portfolio quality, similar to the implied warranty of goods quality.[58] The warranty would provide that the seller of a contracts portfolio followed standard practice (if a practice exists) in making the constitutive contracts. To use the UCC phrase, such a warranted portfolio would "pass without objection in the trade".[59] Hence, under a portfolio warranty, the buyer *would not* have to establish breach by comparing how the originating bank made each individual loan to the underwriting standards that best practice for such a loan required. Second, in the event of breach the buyer would have to prove that the portfolio materially underperformed similarly constituted portfolios. The buyer's damages would be the difference between standard portfolio performance and the portfolio at bar's performance. As an example, before the crisis the default rate for subprime mortgages was 6%.[60] Suppose that the default rate under a particular portfolio was 12%. If L is the portfolio's face value, the buyer's damages would be .06L.[61] The third proposed legal term

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[56] Private law has not changed and, as argued below, Dodd Frank solutions are not particularly helpful.

[57] The "law" here refers to the UCC, a Contracts Restatement or the law in courts.

[58] See UCC §2-314.

[59] UCC §3-314(2).

[60] See authorities, cited supra note 28.

[61] The standard default rate would be a moving number until parties adjusted to the new rules: that is, the default rate would go down because originating banks would make more careful screens. For evidence, regulation after 2008 induced Italian banks to screen potential home borrowers more carefully. A large study of the Italian mortgage market reported: "because of the positive selection [the more careful screen], the delinquency rate of the new borrowers has been roughly 50 percent lower with respect to the rest of the population (i.e., 3.5 points lower with respect to a predicted probability slightly above 6 percent ….the selection mechanism underlying the creation of a new mortgage strongly affects the quality of the pool of borrowers." Sauro Mocetti and Eliana Viviano, "Looking behind mortgage delinquencies", 75 J. Banking and Finance 53, 54 (2017). Similarly, borrower credit scores and combined loan to value ratios, which a slight pre-screen can overlook, importantly predict

would specify when a portfolio seller's poor performance is excused. The term would provide that only material exogenous risks would excuse, and ideally would give courts some guidance regarding how to identify them.

This and the preceding two terms actually would be standards, and parties often contract out of legally imposed standards.[62] Even so, the three suggested additions would serve a useful purpose. As suggested above, the additions would encourage courts to give as much deference to party efforts to implement the aggregation premise by creating tailor made substantive, remedy and excuse terms for portfolio contracts as courts today give to party efforts to implement the individuation premise by creating tailor made terms to clarify the current legal defaults.

Reforms to contract law alone would be insufficient, however, because party incentives to contract out of the new law in order to ensure bankruptcy remoteness and favorable revenue recognition treatment would remain. Bankruptcy remoteness could be preserved in two related ways. First, the Bankruptcy Code could be amended to provide that public investors in contract portfolios cannot be made creditors in a portfolio seller's bankruptcy. This would eliminate the incentive of the commercial parties to write inefficient individuation contracts in order to preserve bankruptcy remoteness. Second, the US could facilitate the creation of a covered bond market. In Europe, covered bonds are issued and sold to the public by the bank that originates the mortgage debt; the public investors, by law, cannot be involved in the originator's bankruptcy.[63] These bonds require originating banks to retain risk while permitting individuals effectively to borrow in the public market. Apparently as a consequence of these virtues, covered bonds account for about a fifth of the European fixed-income market.[64] Second, the revenue recognition rules, as applied to originating banks, should be amended. Rather, a bank should be permitted to book revenue whenever it makes a contract to sell contracts. The accounting or other rules, however, should also be amended to give investors notice that contingent liabilities attend portfolio sales. [65]

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default. see Ionnis Floros and Joshua T. White, "Qualified residential mortgages and default risk", 70 J. Banking and Finance 86 (2016).

[62] Parties, however, may accept at least the proposed damage term because it is "transcontextual": that is, the term requires a court just to compare two verifiable numbers – the standard default rate and the contract portfolio's default rate -- rather than condition its result on an inquiry into local conditions. This rule could be applied to any asset bundle. See Alan Schwartz and Robert E. Scott, "The Common Law of Contract and the Default Rule Project", 102 Va. L. Rev. 1523 (2016).

[63] See authorities cited supra note 14.

[64] See Petri Sulku and Heidi Falkenback, "Pricing models of covered bonds: a Nordic Study", International Journal of Strategic Property Management 1648, 1652 (2011).

[65] There is a concern that putting risk on originating banks would create an adverse selection concern. The bank would hold good loans and sell bad ones; anticipating this, intermediaries would be reluctant to purchase. The

Turning to public law responses, a Dodd Frank reform requires originating banks to retain 5% of the loans in a portfolio on their books.[66] This makes the banks residual claimants to the extent of the holdback. Requiring a hold back is less efficacious than the reforms suggested here, for two reasons. First, the market actually did require some originating banks to retain a percent of the portfolios they sold but this did not prevent widespread bad behavior.[67] Second, and more importantly, facilitating portfolio contracting for contracts to sell contracts would be more effective: when parties write portfolio contracts, the contract originator bears the *entire risk* of bad loans rather than a fraction of that risk.

As regards strategic complementarities among borrowers – i.e., the failure of the isolation premise – we suggest two remedies. First, in particularly hard times, the state should guarantee the loans of borrowers that are most likely to default. This would cause the remaining borrower population to contain a larger fraction of borrowers who either would automatically repay or default strategically. Also, the subsidy would increase the probability that borrowers are monitored. [68] Recall from the model that the higher the monitoring probability is, the more likely the probability is to exceed the monitoring tolerance of strategic defaulters. Hence, the subsidy not only would help the worse off borrowers; it would reduce strategic defaults. Finally, the subsidy would reduce strategic default by changing the expectations of strategic borrowers regarding the strategies of other borrowers. By eliminating default by the weakest borrowers and by changing the strategic calculations of the discretionary defaulters, the subsidy would cause a representative borrower to believe that other borrowers are more likely to repay than to default. The subsidy thus would reduce the contagion effect.[69]

A second possible reform would be for the state to put a floor under foreclosure prices. When they would be too low, a state organ could enter to bid. This would have three effects: it

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warranty, remedy and excuse reforms suggested here for portfolio contracts would ameliorate this concern. Similar rules solve adverse selection problems in other markets.

[66] Pub. L. No. 111-203, 124 Stat. 1375 (2010) (codified as amended in scattered sections of the U.S. Code) § __.

[67] The bank was a partial residual claimant to the extent of the market required hold back. The evidence suggests that originators reduced pre-loan screening despite these hold backs. The following paper answered yes to the question it asked: Keys, et al., "Did Securitization Lead to Lax Screening? Evidence from Subprime Loans", 125 Q. J. of Econ. 307 (2010). See also McCoy and Wachter, supra note 34, at 22: "During the credit expansion leading up to 2008, representations and warranties contributed to the overheating of the cycle by giving false assurances to investors while failing to deter the race to the bottom in lending standards."; Dow, supra note 16, at 1018 (summarizing literature regarding lax originator screening).. This is no apparent rationale for the Dodd Frank 5% requirement, or why the same requirement applies regardless of context.

[68] From the model in Part 2, the probability of monitoring is the originating bank's monitoring capacity over the number of defaulters (P = K/D). The subsidy would reduce D while leaving K unchanged, thereby increasing P.

[69] Consistent with this claim, a recent study showed that the HARP mortgage modification program, described supra note 16, which reduces borrower mortgage payments, reduced the monthly default hazard by 48-62%. Kadiri Karamon, Douglas McManus and Jun Zhu, "Refinance and Mortgage Default: A Regression Discontinuity Analysis of HARP's Impact on Default Rates", 55 J. Real Estate Financial Econ. 457 (2017).

would increase foreclosure prices; it would increase the probability that the bank will foreclose against defaulters or reject steep modifications; and it would increase borrower quality because borrowers would realize more from loans. These three effects also would reduce the contagion effect for two reasons. The originator's payoff from pursuing defaulting borrowers would increase so the probability of pursuit would increase; and, relatedly, default would be less attractive to borrowers. As these effects would manifest, the probability that borrowers assign to other borrowers defaulting will fall, so that widespread default would become less likely.

Finally, Dodd Frank prohibits a lender from extending extend a home mortgage unless the lender has reason to believe that the borrower can repay it.[70] This is reform is problematic. Initially, the reform increases the regulatory burden on banks without doing much to reduce the probability of bad loans. Because it always has been poor practice to lend to borrowers who cannot pay, the reform attempts to replicate the best practice warranties. To do this effectively, however, requires public enforcement: this paper shows that best practice warranties are not privately enforceable. Public enforcement is unlikely to be effective either given the size of the mbs market and that an originating bank's reasonable expectations regarding particular borrowers would be difficult for the regulator to recover. Further, even if the reform increases the quality of the borrower pool, much of the strategic default concern would remain.

Turning to the commercial parties' preference for weak contracts in a possible equilibrium, the best remedy would have the state not enforce them. Recall, though, that the weak contract equilibrium requires there to be large economies of scale in portfolio size together with macro conditions that much reduce the risk of default. It may take an administrative agency such as the Federal Reserve Board to identify when those conditions obtain in time to enact a ban. In the meantime, the reforms suggested here would make the strong, aggregated contracts more attractive to firms and to borrowers.

6. Conclusion

The state enforces contracts in order to permit promisors to make credible promises to perform. An implication is that promises must condition on verifiable information: if the seller promises to deliver ten widgets, the buyer must be able to verify to a court, at acceptable cost, that the seller actually tendered ten compliant widgets. If it would be too costly for the buyer to

[70] [cite] Bank loans are exempted from this requirement if the consumer's debt to income ("DTI") ratio is below 43% per month and the Consumer Financial Protection Bureau also has exempted loans eligible to be purchased by Government Sponsored Agencies. A recent study found that this Dodd Frank reform materially reduced credit in the large loan market: "we estimate that the policy eliminated 15 percent of the high-DTI jumbo market in the year that it was implemented …." The exemption for low DTI loans will expire in 2021. If it is not renewed, then applying the paper's estimation method to the entire home purchase mortgage market "would imply a reduction of roughly $12 billion in total mortgage originations" a year. Anthony A. DeFusco, Stephanie Johnson and John Mondragon, "Regulating Household Leverage" Manuscript (2017 at p. 4).

verify the seller's tender, the seller's promise to deliver would not be credible because the buyer could not hold the seller to account. In this circumstance, rational buyers would not promise to pay for widgets. But if, somehow, buyers did promise to pay, sellers likely would anticipate the buyers' inability to prove breach and would then save costs by degrading widget quality or delaying delivery.

This reasoning surprisingly does not apply in markets for contracts to sell contracts, such as the mortgage backed security market we primarily analyze here. Rather, banks and similar entities originated and sold portfolios of mortgages to financial intermediaries, who ultimately resold them to public investment vehicles such as trusts and special purpose vehicles. These trades were initiated under what we call mistakenly aggregated contracts between originating banks and intermediary purchasers: in these contracts, the banks warranted that they created *each portfolio loan* in accordance with current best underwriting practices. Such warranties promised, for example, that individual borrowers lived in their homes, they were employed, real estate appraisals were conducted properly and so forth. An intermediary buyer, however, could not verify compliance with these and similar warranties because loan by loan verification would have been too costly. Hence, in this "market for contracts" buyers did promise to pay, and indeed paid, for products on the basis of *unverifiable* originating bank promises. The banks responded as would be expected: they degraded lending standards. In addition, the aggregated contracts put the risk of correctly created nonperforming loans, or loans whose noncompliance with warranties could not be verified, initially on the intermediaries and ultimately on the public investment vehicles. These parties could not monitor or renegotiate loans efficiently (or at all).

We argue that parties mistakenly aggregated contracts to sell contracts because contract law does not account for this contract form. Parties also were caused to write aggregated contracts in order to ensure that the public investors would not be involved in an originating bank's insolvency, and that the originating bank could recognize revenue from a portfolio sale contemporaneously with the sale.

Recognizing that the contract to sell contracts is an independent contract form has several law reform implications. First, contract law should expand to include portfolio contracts to sell contracts. For example, a remedy default would permit a portfolio buyer to establish breach by proving the difference between portfolio value if the originating bank had complied with its promises and portfolio value as delivered. Because this burden of proof would be easier to satisfy than the burden under the aggregated contracts, the portfolio default would create incentives for originating banks, and other such contract originators, to screen the individual promisors optimally. In addition, the accounting revenue recognition rules should be repealed, and an amendment to the bankruptcy code should provide that public investors cannot be

involved in an intermediary's bankruptcy. As an alternative, or a supplement, to amending the bankruptcy code, the state should create a covered bond market, in which originating banks can issue debt directly to the public, which nevertheless would remain remote from a bank's insolvency. The current rules regarding revenue recognition and bankruptcy remoteness create an externality – creating bad loans -- that always was potentially large and, in the Great Recession, turned out to be very large. Further, when widespread default is a possibility, the state should consider guaranteeing the loans that are least likely to perform. This would permit portfolio buyers to concentrate on pursuing other borrowers, and may cause these borrowers to repay because they will come to believe that many other borrowers would repay. Finally, the state should consider regulating aggregated portfolio contracts when their failure would have macroeconomic implications.

We conclude with the recognition that our law reform proposals are more suggestive than developed. This partly is because, though we have identified the key function the contract between the originating bank and financial intermediary should perform – to put sufficient risk on the bank – we have not characterized that contract itself. Hence, our principal contribution is to identify the contract to sell contracts as a contract type that warrants serious study, and to show that neglect of this contract's special features caused, and can continue to cause, serious harm. There is more contract analysis to do.

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